



# The Sun's Energy/Weather & Climate

Middle School Earth Science | Spring Module 1 | Lake Lotus Park

## NGSSS Big Idea: Big Idea 7—Earth Systems and Patterns

The scientific theory of the evolution of Earth states that changes in our planet are driven by the flow of energy and the cycling of matter through dynamic interactions among the atmosphere, hydrosphere, cryosphere, geosphere, and biosphere, and the resources used to sustain human civilization on Earth.

### Benchmark Code & Description:

**SC.6.E.7.5**—Explain how energy provided by the sun influences global patterns of atmospheric movement and the temperature differences between air, water, and land.

**SC.6.E.7.6**—Differentiate between weather and climate.

**SC.7.P10.1**—Illustrate that the sun's energy arrives as radiation with a wide range of wavelengths, including infrared, visible, and ultraviolet, and that white light is made up of a spectrum of many different colors.

**SC.8.E.5.6**—Create models of solar properties including: rotation, structure of the sun, convection, sunspots, solar flares and prominences.



## LEARNING GOAL/OBJECTIVE

To understand the sun's effects on the earth's climates.



## PREREQUISITES

### Review:

- Vocabulary Words
- Applicable Textbook Sections



## VOCABULARY

- Infrared Radiation
- Ultraviolet Radiation
- Climate
- Electromagnetic Waves
- Radiation
- Weather
- Energy
- System
- Coriolis Effect



# HANDS-ON ACTIVITIES

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## **Task(s):**

- Read thermometer
- Take reading from Davis Weather Station

## **Provided Materials:**

- Digital Thermometer
- Infrared Thermometer
- Clipboard/log sheets/pencils
- Labquest Meter
- Davis Weather Station

**Career Options:** Climatologist, Meteorologist

## **Lesson Steps:**

1. Students will begin module on pier to take temperatures from color board and glass jars.
2. Discuss weather vs. climate, microclimates, UV index and solar power.
3. Observe and record data collected from the weather station and the Labquest meter.
4. Discuss Coriolis Effect.
5. Proceed to next module via center boardwalk.



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## DATA RECORD

**Questions:**

1. What supplies most of the Earth's energy? \_\_\_\_\_
2. \_\_\_\_\_ is the method by which energy is transferred.
3. \_\_\_\_\_ and \_\_\_\_\_ are two of the most important components that the sun provides.
4. \_\_\_\_\_ is the term that describes long-term trends in the weather.
5. What is the name of the effect that describes predominant wind patterns on Earth? \_\_\_\_\_

### Color Board Experiment

Color	Temperature	Color	Temperature	Color	Temperature
White		Orange		Green	
Black		Brown		Purple	
Red		Yellow		Blue	

### 3 Glass Jar Experiment

	Air Temperature	Water Temperature	Soil Temperature
Sun			
Shade			
Plastic Bag			

	Site #1	Time
Air Temperature		
Relative Humidity		
Wind Direction and Speed		
Conditions/Cloud Cover		
UV Index		
W/m <sup>2</sup>		
GPS Reading	Latitude: 28°38.675'N	
	Longitude: 81°25.384'W	
	Elevation: 58 ft.	

### The Coriolis Effect

Observations: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

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